

**IBM** INDUSTRIAL  
PRODUCTS

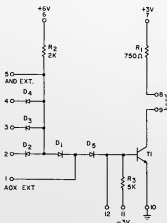
## Functional Description

The AOI-2A module consists of three way diode positive AND circuits followed by a diode OR and a saturating transistor inverter.

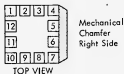
Pins 2, 3 and 4 are the AND inputs connecting Pin 5 to common anode diodes (FDD module) to extend the AND Fan In. This module is capable of higher Fan Out than the AI-2A module. The OR function can be accomplished by:

1. OR extending Pin 1 using an AOX-1A, AOX-2A modules
2. dotting collectors (parallel connected collectors) with other modules - only one collector resistor is required.

## Schematic

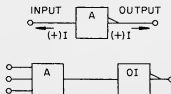


## Terminal Configuration



Pin 12 Leave Open

## Block Diagram



## Maximum Ratings

Input Voltage = 13V

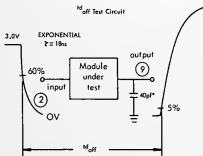
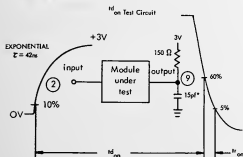
Output Voltage = 6V

$I_E = 24\text{ma}$

## AOI-2A Module Functional Tests

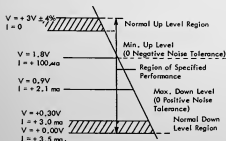
TESTS	TERMINAL CONDITIONS												°C	ADDITIONAL LOAD REQUIREMENTS	VARIABLE	LIMITS		UNITS
	1	2	3	4	5	6	7	8	9	10	11	12				MIN	MAX	
DC ON		+1.8V	+1.8V	+1.8V		+3.75V	+3.12V	V <sub>0</sub>	V <sub>0</sub>	GND	-3.12V		25 75	15.5 ms CURRENT INTO TERMINAL 8	V <sub>0</sub>		0.30	V
DC ON	2.12K TO 5.05V						+3.12V	V <sub>0</sub>	V <sub>0</sub>	GND	-3.12V		25		V <sub>0</sub>		0.17	V
DC OFF		+0.95V	+6.0V	+6.0V		+6.24V	-2.88V	V <sub>0</sub>	V <sub>0</sub>	GND	-2.88V		25		V <sub>0</sub>	2.64		V
DC OFF		+6.0V	+0.95V	+6.0V		+6.24V	-2.88V	V <sub>0</sub>	V <sub>0</sub>	GND	-2.88V		25		V <sub>0</sub>	2.64		V
DC OFF		+6.0V	+6.0V	+0.95V		+6.24V	-2.88V	V <sub>0</sub>	V <sub>0</sub>	GND	-2.88V		25		V <sub>0</sub>	2.64		V
DC NOISE					+1.52V		-2.88V	V <sub>0</sub>	V <sub>0</sub>	GND	-2.88V		75		V <sub>0</sub>	1.8		V
I <sub>on</sub>		INPUT	+3.0V	+3.0V		+6.0V	+3.0V	15 μF TO GND	OUTPUT	GND	+3.0V		25	1500 RESISTOR TIED BETWEEN TERMINALS 7 & 8	I <sub>on</sub>	14	43	mA
V <sub>on</sub>		INPUT	+3.0V	+3.0V		+6.0V	+3.0V	15 μF TO GND	OUTPUT	GND	+3.0V		25	1500 RESISTOR TIED BETWEEN TERMINALS 7 & 8	V <sub>on</sub>	7	30	V
I <sub>off</sub>		INPUT	+3.0V	+3.0V		+6.0V	+3.0V	40 μF TO GND	OUTPUT	GND	+3.0V		25 75		I <sub>off</sub>	8	26 36	mA

## Test Waveforms

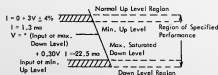


\* Including probe capacitance

## Input Requirements



## Output Specifications

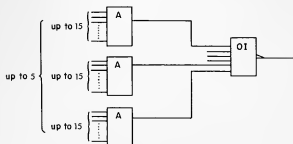


\* Defined by collector load impedance.

## Fan In

AND - Can be extended up to total of 15 inputs

OR - Can be extended up to total of 5-way OR's  
(See diagram below)



## Fan Out

Total available collector current = 22.5ma

$$22.5\text{ma} \geq I_{R1} + N_1 K_1 + N_2 K_2 + \dots$$

$I_{R1}$  = Current through collector resistor.

$N_1$  = Number of AI-2A loads being driven

$N_2$  = Number of AOI-2A loads being driven

$K_1$  = 2.3ma, AI - 2A loading constant

$K_2$  = 3.0ma, AOI - 2A loading constant

To double the Fan Out, the output collectors and inputs must be paralleled.

## Maximum Power Supply Current Requirements (per module)

	ON	OFF
+6V	2.1ma	2.8ma
+3V	4.0ma	0ma
-3V	0.9ma	0.7ma

## Maximum Power Dissipation (per module)

ON	OFF
37mw	21mw

$$\text{Average Normal Power Dissipation} = \frac{\text{NOMINAL ON} + \text{NOMINAL OFF}}{2} = 26.5\text{mw}$$

## General Wiring Rules (For Printed Circuit Wire - 10 Mil Width Lines)

The input single line length should be less than 2.5 ft to prevent excessive reflections and noise coupling. The total net length of either input or output should be less than 60 inches unless longer delays can be tolerated.